Management Information System in Automobile Industry

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Abstract: *Management Information Systems is the study of the relationships among organizations, technology, and people. It has become a major part of companies, over recent years most of the companies try to incorporate Management Information Systems to help them compete with already existing industry giants. Multiple technology companies have been using MIS to boost sales, get improved profits, stay ahead of the competition, but this is not limited to the IT industry alone. MIS has revolutionized the Automobile Industry, companies have adopted MIS and are keeping up with the ever-evolving technologies and business requirements, making it more profitable and being more adaptable to change. In the paper, we will mention why companies require MIS and how have they improved after the use of it in communication systems, operation management, decision making, record-keeping, etc. Case studies on Industry-leading companies like Toyota, Honda, and Tata and how MIS has helped these companies in various ways, and how it has improved their products and profits as well. The paper highlights the areas where Toyota, Honda, and Tata use MIS, including the systems which Toyota and Tata have adopted to improve themselves as an organization. Toyota's SAP, just-in-time, Jikoda, and Kaizen methods are elaborated as well as Tata's SAP system and CRM systems are explained in detail. The use and benefits of the systems are also touched on. The paper contains a detailed comparison of how Toyota and Tata have improved in revenue, vehicle production, etc., including the graphs of the mentioned fields before and after the incorporation of MIS. Although there are a lot of benefits there are always certain disadvantages to the use of Management Information Systems, in this paper, there are a few cons mentioned due to the incorporation of MIS.*

Keywords: **Jidoka, Just-in-Time, Kaizen, Line Management, ERP System, CRM System**

1. INTRODUCTION

Management Information System is the information used for decision making along with the study of technology, organizations, people, and the associations among them. Maximum welfare is achieved in firms from investment in equipment, business processes, and personnel from help from professionals of MIS. MIS emphasizes the service through technology which is a people-oriented field. There have been constant improvements being made to MIS since its origin, having gone through multiple eras. There were five main eras of MIS:

Era 1

This was the first era of MIS from 1960 to 1970, this was the start of MIS in the computerized form. Here management requirements, governance concerns, and centralization were the main focus of Information Systems. Departments of accounting controlled the reports of the information systems as well as the system itself.

Era 2

This was the second era of MIS which was still focused on the same areas as that of the first which was management and governance. The second era caused more departments to use technology and benefit from it. The scope and shape of the projects relating to information systems were set on user-led initiatives and steering committees which started from 1970 till 1980.

Era 3

During this era which was from 1980 to 1990 decentralization of information and the escalation of centralization of IS had started. During this era CIO (Chief Information Officer) were being appointed in multiple companies to oversee the management and possession of IS.

Era 4

This is the era that began in 1990 and is still going on. Management and governance are still the main focus of IS. Although there are several changes as well such as the distribution of systems being more widespread such that each employee has access to many platforms. Integration of MIS with multiple businesses such that a business run with MIS can access the customer as well as the supplier information for restocking inventory, customer satisfaction of certain products, and much other information can be gathered with ease.

Era 5

This era is the era of future prospects of MIS which includes improvement of technology and new management techniques which bring an overall improvement to a business. This era will include high-speed networking with the integration of many upcoming technologies such as Artificial Intelligence and Cloud Computing to bring about another revolution in the field of management. This era is believed to mark a difference in the domination of workers, such that knowledgeable decisions can be made by any employee. [1][2]
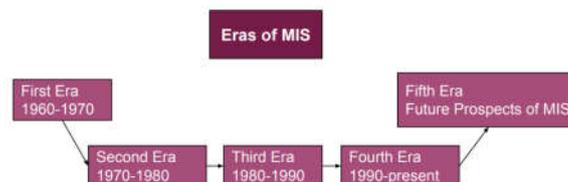

Figure 1. The Eras of Management Information Systems

2. Improvement in companies using MIS

2.1. Business Communication Systems

The process of allowing managers to rapidly communicate in order to gather and distribute information is a part of management. Storing documents in folders can help managers to use the information systems in a more efficient way rather than using Email though it is quick and efficient. The use of folders can help in sharing information with the employees who require it. Employees can collaborate in a more systematic way when this form of communication is used.[3][4][5][6]

The system tracks information that is altered by any employee if additional information is needed to be communicated. The target audience then receives a new document from the manager who collects and compiles the inputs.[7][8]

2.2. Business Operations Management

Information controls how businesses are being managed. As more information can be offered to Information Systems, the more the company can operate efficiently. The information systems are used by many companies to gain a significant advantage over their competitors or to give their customers better services to stand out. Companies get a better understanding of what products and services are most liked by the customers by using the data collected by sales. Companies can streamline their operations with guidance received from the information systems.[9][10][11]

2.3. Company Decision Making

The information systems of a company can help the company make better decisions by modeling the results and delivering the required information for their decisions. Selection alternatives from a course of action and to carry out the corresponding tasks, all involve decisions. When the data is accurate and the information is up to date, the company can make many choices with confidence. Many times, companies have multiple choices which look appealing, in order to make a choice the company can run many different scenarios in order to select the right option with the use of information systems. Sales, cost, and profits will be given for every scenario in order to calculate the choice which gives the most beneficial result.[12][13][14]

2.4. Company Record-Keeping

Records of regulatory and financial purposes are required by the company for taking corrective action and finding the causes of problems. Operational data, revision histories and documents, and communication records are stored by the information system. In order to organize data, the trick is to exploit this recording capability and order to present and process by using the system as historical information which is useful. Companies use this information to estimate, prepare costs and also predict how the actions are going to affect the company.[15][16][17][18]

3. MIS in Toyota

Toyota is one of the biggest automobile companies in the industry. Toyota is one of the companies which has been greatly influenced due to the growth of technology. They have improved manufacturing operations in the company, this is done by delivering and providing car parts, and vehicles are done much ahead of time which leads to significant advances.

In order to achieve smooth function circulation, the car business and structuring of processes remedies are offered by the MIS of Toyota. Operation procedures are advanced with the help of Management Information Systems.
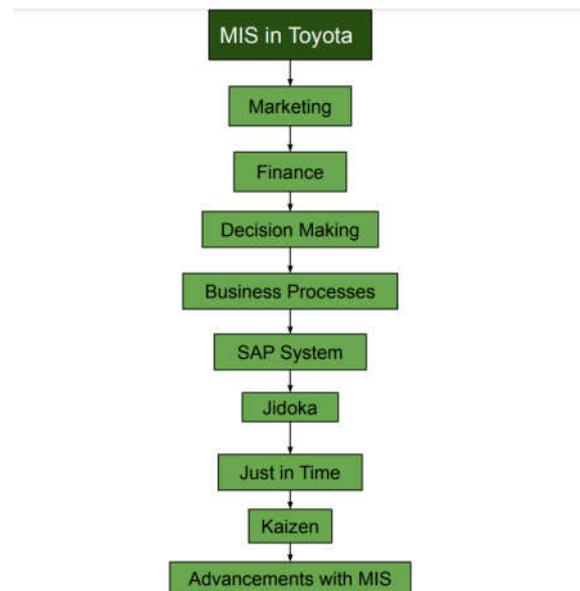
Figure 2. The implementation and flow of MIS in Toyota in this paper

In Toyota, due to the use of MIS, the company is able to complete functions smoothly, the car model structuring and technique developments from prototype to the phase of creation are all accomplished in a composition. To achieve better product development the company needs to coordinate well with the suppliers and also offer better development of products along with the internet with suppliers.

Toyota accomplishes efficiency and productivity in functions by areas of MIS used in excellent planning and through the structure of Model-mix. In order to improve the steps of operation, Toyota uses Model Mix structuring which is important for the organization. Discounts on make-to-order items and allows successful processing of accumulation.

Purchases on professional production are gathered by the MIS systems used in Toyota from the planning system which is used in the company. There are many requests including the necessary parts of the car for assembling. Toyota uses its MIS to schedule delivery and to supplement Toyota's assembly line strategies.

During the delivery of the car parts, Toyota receives the details of the delivery to provide them with the proper and accurate data on the subject. Real-time processing of assemblage is done by Toyota's MIS. Information on utilization and confirmation of products is consistently tracked by MIS.

Toyota validated a resolution that could aid and improve organizing creations to satisfy the customers' desires. Order to delivery period is reduced due to the help of the organization's MIS tools. This helps also in the analysis of demand and monitoring the traffic of the deliveries by improving the activities of the supply chain. Toyota is able to tremendously decrease the time to customer due to the vehicle excellence by increasing the activities of the inventory over all the establishments.
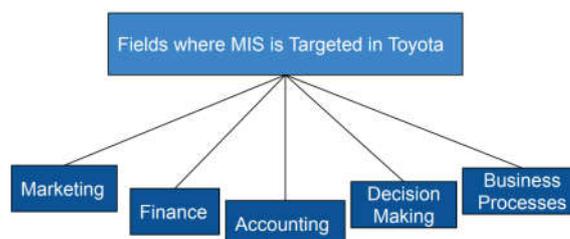
Figure 3. MIS fields targeted by Toyota

3.1. Marketing

Forecasting sales, price activities, development of products, and marketing are all done in regard to the functions of marketing in the business which is aided by MIS. MIS relies a lot on external data resources which are also followed by many other companies.

3.2. Finance

MIS provides information relating to finance and is sent to the department of finance in Toyota and the concerned personnel. The employees of the department must inspect the financial outcome of the current and past, predict the financial outputs of the future, and MIS generates the information over time to handle and inspect the use of capital. Based on the availability of parts by monitoring and setting, predictions can be made on the charges and sales of the vehicles, all through MIS. Customer vehicle planning can be based on the decision offered by the prices and customizations through the web car enhanced sales of Toyota. On designing the vehicle, the predicted price of the car is generated through MIS. To achieve improved speeds of delivery to customers Toyota finds the particular design of the dwelling address of the vehicle which is done through vehicle searching.

3.3. Accounting

All the minds of accounting handle the information related to accounting in Toyota. Company restrictions and functions of accounting are improved significantly by the options which are received from the MIS of Toyota. The business' duties of accounting are improved as well, the ever-growing industry standards can be met with the proper development and needs, empowering the company to immediately react and be able to react appropriately.

3.4. Three Tiers of Decision-Making Management

Figure 4. The Decision-Making Tiers

3.4.1. Operational Level Systems

The operational level decision-making is a really profitable and important transform inside Toyota, stakeholders are provided with all the authentic information by the MIS. In order to strengthen the information being reported which will be valuable in the functional level of decision making in Toyota, the company uses MIS. The MIS of Toyota can gather, process data as well as result in a way to cope, dwelling address, and adjust the inaccuracies immediately.

3.4.2. Management Level Systems

To help the decision-making of the management level in Toyota there are productive interior controls. Control through internal tracking and handling

efficiently is how information is collected. The MIS in Toyota utilizes exterior and interior audit processes which make it highly effective.

3.4.3. Strategic Level Systems

Important data is dealt with and prepared properly in Toyota to have efficient and effective strategic level decision making. Study trends and information can transform based on the various ways information is documented and collected. Through the course of time documentation activities and data collection will undergo a change. Many flexible methods have been taken by the Management of Toyota to advance systems through MIS. Well set up procedures which are taught to employees properly and have systems which are being monitored, all these together help business processes work well in making decisions at a strategic level in Toyota.

3.5. Business Processes being taken care of in an efficient way

System Management is the result of the consolidation of MIS in Toyota. The knowledge on vital matters such as the customer demands at present and have the magnitude to propose the money for new ventures obtained from the leaders and the employees of the company are the MIS users. In order to ensure responsibility and processes in business management of possession are preserved by Toyota to control methods of businesses duly. To reduce or prevent the completion of information that is inaccurate MIS comes into play even though it will not cut costs completely. Assets are misused due to the awful decisions that a company makes that cause a reaction where the budget and earnings will be poor.

Essential techniques of the company are improved by including MIS in the functions of Toyota in order for organizational goals to be complete. These include

    a.   Hiring skills based on the functions of employees who are reliable

    b.   Control of procedures to enhance the efficiency of operations

    c.   Management of financial performance is enhanced with the improvement applied to it.

The industry of automotive and business issues and demands are all met by the MIS of Toyota. The goal of MIS in Toyota is to be a productive and efficient MIS where different segments in the market form the automotive pillars in the industry. [18]

3.6. Incorporation of SAP Systems in Toyota

Toyota started to use SAP Systems in their work to improve their performance. SAP systems were used to tie up the assembly line procedures of Toyota with the schedules of shipment which were generated by the systems. Suppliers were given exact shipment schedules and detailed information delivered by Toyota. Shipment Activities are updated on the Toyota Online Portal where the providers are provided with the provisions. Usage of the website allows real-time information monitoring which includes receipts, release schedules, etc. Shipping details are given to Toyota as soon as the car parts are delivered. This gives them the latest information. The line receives the car parts which are sent to the storage facility efficiently and quickly.

3.7. Use of Jidoka and Just in Time

Jidoka verifies and tracks the production and makes consistent use of the information which is being generated. Prevention of defective products being made is where Jidoka is mainly used, it helps in immediately stopping the equipment in the case of occurrence of problems. The production process where it makes the

necessary items for what is required in the next process in an uninterrupted flow is the concept of Just in Time.

One of Toyota's Production Systems' vital elements is the usage of Jidoka in the process of production. Self-inspecting workers are forced to address the imperfections almost immediately in order to lower the work amount done for a product that is defective. When a problem has been altered some machines that are automated can allow human operatives only during the process of detection.

In order to improve efficiency, unnecessary carrying costs, and to save warehouse space is why the production style of Just in Time is used. In this method, the focus is on providing the components only when they are required by the workstations. As no alternatives are available the components and cars must be built perfectly the first time, which makes hiding the manufacturing issues impossible. Addressing these issues must be done immediately.

In order to produce good quality vehicles, the usage of just in time and Jidoka philosophies benefits and is able to satisfy the customer's requirements completely.[19][20]

3.8. Kaizen

The Toyota Production System consists of one of the code principles called Kaizen. The use of kaizen is used both in terms of work and equipment procedures, it helps in improving efficiency, eliminating waste, ensuring maximum quality. Worksites' productivity is maximized by the standardized work which is improved by Kaizen. Identification of the problems accurately and involving the consistent procedures are done by the standardized work.

Kaizen helps the TPS in suggesting solutions that are practical and identifying areas that require improvement. Every member is responsible for eliminating waste that is present within the local environment and adopting improved standardized procedures, this is called kaizen blitz which is a solution that is surrounded by focused activity.[21]

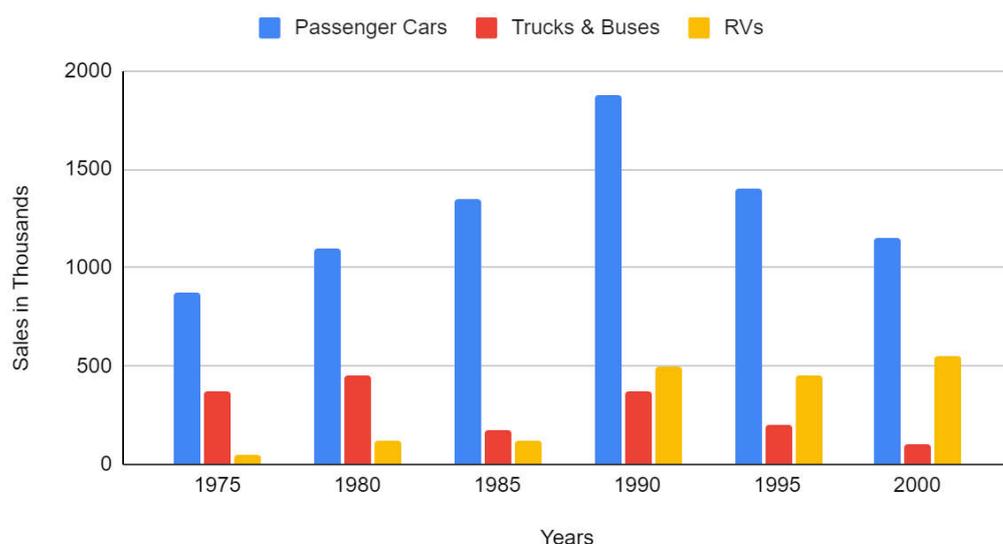### 3.9. Toyota's Advancement with MIS

Figure 5. Sales of Cars, Trucks, and RVs. The figure is just an approximation used to illustrate the benefit of MIS[22]

Toyota had incorporated MIS in 1986, in the graph above we see that the sales were made from the year 1975 to 2000. In the year 1985 (before MIS) and when it is compared with the sales made in 1990 (after MIS) there is an increase of almost 39% in passenger cars, 114% rise in trucks and buses and 300% increase in RVs. The statistics help to understand that on employing MIS the sales of the cars, buses, RVs have increased reaching an all-time high in the year 1990 which Toyota had not reached or come close to before 1990.
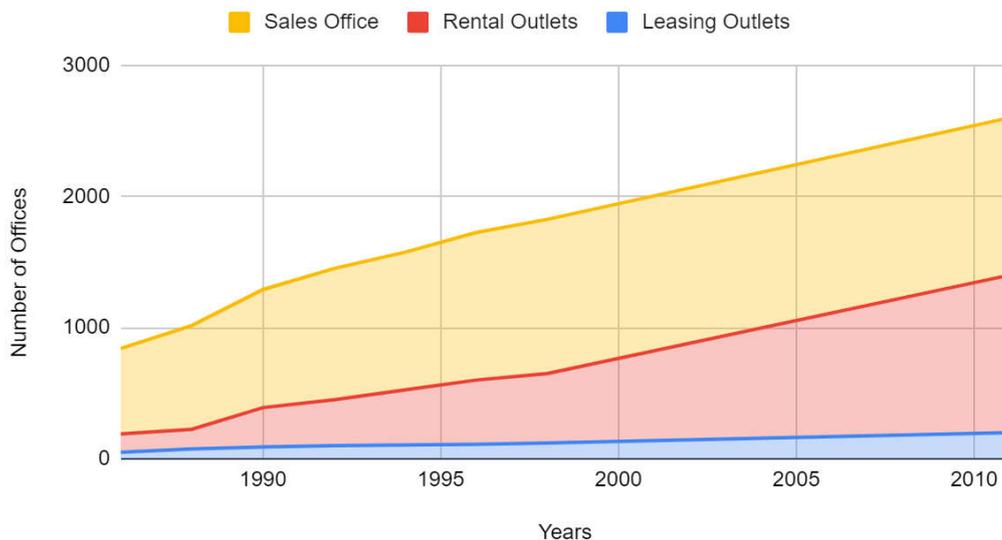

Figure 6. Number of Leasing Outlets, Rental Outlets, Sales Offices. The figure is just an approximation used to illustrate the benefit of MIS[23]

Toyota had a number of offices and outlets which is very important for an Automobile Company because they must try to reach every country and city to grow their sales. Toyota uses leasing and rental outlets and sales offices to increase its revenue. The use of MIS helped Toyota achieve this by giving Toyota the correct information on which customers to target and what type of services are expected in different countries which has led to Toyota being established all over the globe. After 1986, Toyota increased the number of leasing outlets by 50%, the number of rental outlets by 7%, and the number of sales offices by 21.5%. Toyota kept expanding its empire, constantly increasing its outlets and sales offices. By the year 2011, they expanded by 300% in leasing outlets, 757% in rental outlets, 84.5% in sales offices from 1986.
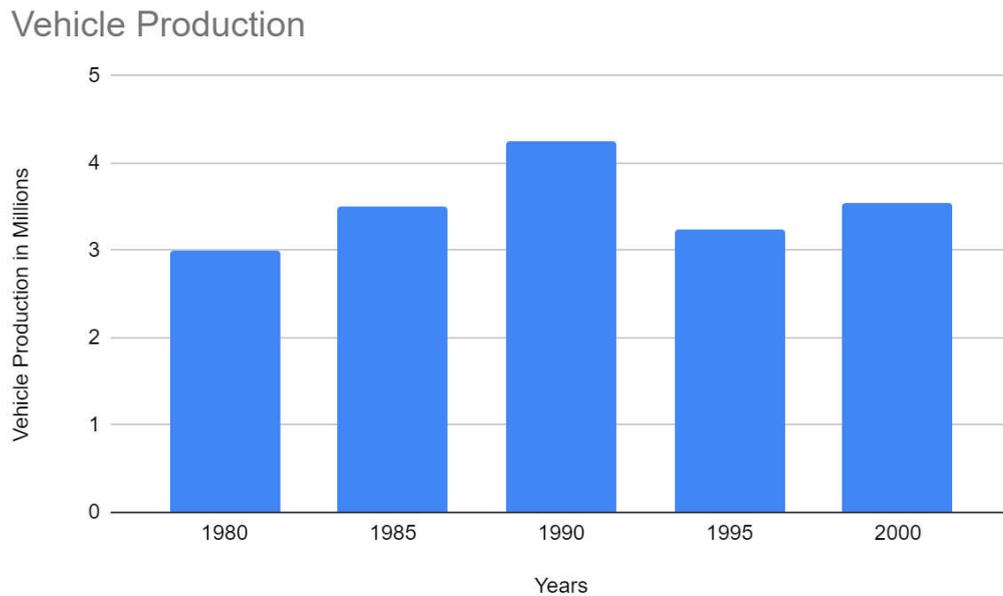
Vehicle Production

Figure 7. Vehicle Productions. The figure is just an approximation used to illustrate the benefit of MIS[24]

The graph shows the number of vehicles Toyota has produced. There is a rise in the number of vehicles due to the increase in the number of stores after 1986, this caused more demand around the world leading to an increase in production. The success of Toyota has continued to increase with the different incorporations of MIS making their services and products better as the years go by.[25]

4. MIS in Honda

Expenses for a company can be relatively high due to the usage of performance and security which is provided by MIS systems of peak manufacturers. A balance is maintained between the performance for improving their hardware equipment and the price by Honda. Brand-name networks of hardware equipment help many companies concentrate on providing efficiently priced businesses. In order to suit the company profile, Honda needs to keep an eye out for new alternatives for them to acquire new hardware equipment.[26]
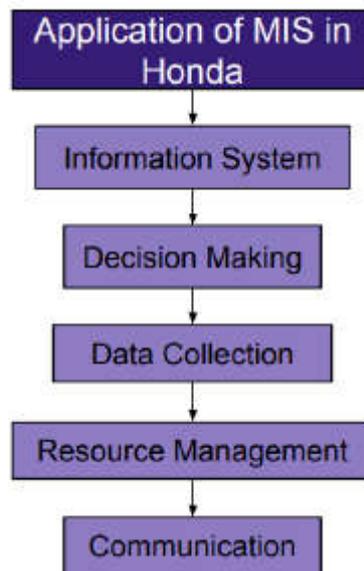
4.1. Applications of MIS in Honda

Application of MIS in Honda

Information System

Decision Making

Data Collection

Resource Management

Communication

Figure 8. The Application of MIS in Honda

4.1.1. Information system

Organizations require some type of Information system to conduct business daily. A combination of business processes as well as computerized systems is to acknowledge the market fluctuations and important to manage the company at a profit. To report and gather all the information related to particular business processes of a company, all of this comes under the role of MIS. The objectives of Honda are achieved by making use of the information and reviewing the data collected enabled by MIS.

4.1.2. Decision Making

IT systems are being used in every company due to the rise of technology and the use of companies anywhere. Businesses find it hard the escape from IT. Honda has quite a few departments and fields where the use of MIS is priceless. The use of computers is to help in understanding the importance of strategies and their use, it can also help the organization's managers in decision-making processes efficiently though it will not be able to come up with its own strategies. In order to make data useful companies use MIS where the data is converted into information that helps in decision making. Honda is assisted by MIS in providing financial statements and reports on performance to help in implementing plans, planning, and supervising. To manually manage large volumes of data is impossible, the use of MIS helps in collecting valuable information and transforming it into logical reports. Other tasks which are not possible manually such as patterns and trends can be recognized by Honda. In order to answer 'what if' questions, MIS can run multiple simulations and find the right answer to a diverse set of questions using raw data. Honda was able to make multiple decisions with the help of MIS which otherwise would not be possible.[27]

4.1.3. Data Collection

MIS helps in providing the employees with the benefit of saving time along with collecting large amounts of information on the business. In the past handling of files was done manually, but on incorporating MIS, the data is examined quickly after the data is fed to the data processor of the computer. Data collection with the help of

MIS helps in improving the speed of decision making which in turn improves the working efficiency of the organization.

4.1.4. Management Methods

The managers are given the information by MIS on which departments or areas require improvement. The approaches and techniques for correcting activities of the business will be based on the abilities of the managers and the management style that has been rehearsed in the organization. In the decentralized approach of management, corrections are made quickly by the line managers because it requires a great amount of independence in the process of management. Decisions can only be taken by the top levels of management because the authority and power lie with them in a centralized management approach.

4.1.5. Resource Management

Resource utilization is very important in businesses, MIS allows Honda to see if the resources are being used in an efficient and proper manner. Resources that require the organization to regularly monitor and supervise are raw materials, labor, equipment, assets, and many more, these are management resources. If the company does not use its resources properly it might lose its competitive advantage over its competitors and might fall behind in the environment of competition. Loss of sales and lower profit margins might be seen in companies that do not use their resources effectively.[28][29]

4.1.6. Communication

Decisions can be taken by managers based on the information of the organization which has been given by the MIS which is achieved by communicating appropriately. There can be an upward or downward flow of communication. The communication system allows the managers at the top level to discuss and communicate data that has been received from managers of department level and managers of front line management, this is a downward flow of communication. It is vital that the front-line workers communicate with managers of the top level in order to exchange the data that they have received from the MIS. Honda is able to obtain information or inputs from different management levels, using MIS systems to make proper decisions.

4.2. Facilitating Decision Making at Three Tiers of Management

Information is provided regularly to Honda by Management Information Systems. MIS comprises Purpose, Arrangement and Order are the main functions. The main uses of MIS are:

- Implementation and planning strategically
- Service Cycles are reduced or lessened
- Efficient working is achieved by improving the employees' productivity
- Consumer demands and needs are understood better
- Reducing the marketing and product development cycles of life.
- The progress of re-engineering and business processes are smoothened

MIS applications across the administration:

- Policymaking procedures are carried out
- Development and research is carried out

- Various ways to recognize different risks and different methods to manage them.

- Requirements of legislative and regulatory are met

- Evaluating achievements, quality, and performance

- Reinforcing quick and reliable decision making[30]

In Honda, it is fundamental for decision-making at different levels. Different Levels of MIS in Honda

4.2.1. Senior Management

To plan business strategically, senior management is directed. Honda business is positioned based on the information provided, plans and policies implementation, employee performance reviews or evaluation, and analyzing the competition and strategic planning is influenced by the superficial components.

4.2.2. Middle Management

Organizational and operational functions are performed by the managers who are aided by MIS by providing:

- Procedures for delivering data

- Usage of resource assessments

- Units of work are synchronized based on the information

- Planning of operational data

- Ways of solving problems and budget control

Allowing middle management to administer programs:

- Resource Usage Management

- Implementation of procedures is done by providing data

- Plans and projects are scheduled

- Administration of programs by providing information

4.2.3. Line Management

Honda allows management of activities by line managers by providing:

- Solving problems by using appropriate information

- Using data in order to make appropriate decisions

- Delivery of routine services by receiving correct information [31]

4.3. MIS - Management of Business Processes Efficiently

Management of Business Processes can be defined or termed as the implementation of activities in the organization from leading, organizing, controlling, planning, and monitoring.

The 5 main manager functions in Honda are:

- Organization - here resource organization is the main function like service, people, equipment, and space

- Controlling - Different department activities are monitored and supervised

- Planning - Company's directive functions such as diversification, the location of operation, etc.

- Coordinating - Various departments activities must be coordinated in Honda

- Decision Making - this includes all the necessary decisions that must be taken in order to grow Honda, its services and products, its IT department,
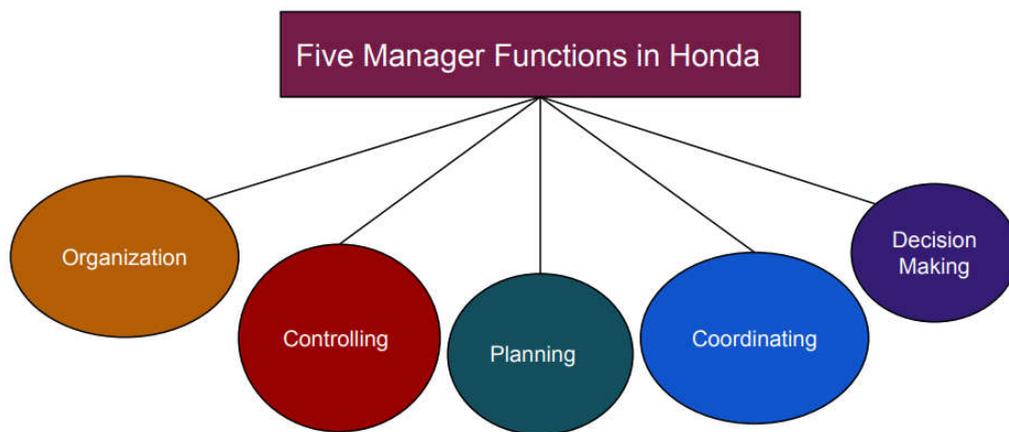

Figure 9. The Five Manager Functions in Honda

Honda is one of the top companies in the global ambiance to overcome multiple issues which include sourcing, approving, and qualifying new products and existing parts management. As the competition has increased in this industry, Honda decided to use MIS in their systems for sourcing and qualifying new raw materials which are to be managed in order to meet the scheduling requirements. [32]

4.4. Advantages of using MIS

- In order to see the buyers and backlogs of workloads, managers are provided with this vision
- Due to the use of MIS, Honda is able to source the parts within the given time constraints
- Business processes help in meeting the time constraints of new products and are also beat by process shuffling.
- Cost reduction and accuracy is assured by managing the vendors and the suppliers frequently

Business processes have been enhanced in Honda which leads to the larger requirements of production processes. Approaches to improve the management of the supply chain are achieved with better and improved data and information on the processes of business. This includes the origin of the raw materials to production to the allocation of the products which have been finished. Honda is currently able to respond to the market changes rapidly and efficiently due to the changes made to supply chain management. Honda is able to render efficient and better products and services in order to stay ahead of its competition. [33]

5. MIS in Tata Motors

Tata Motors Limited is a multinational automobile manufacturing company based in India. The company was founded by Jehangir Ratanji Dadabhoy Tata in 1945. The net worth of the organization is around 34 billion USD as of Dec 2021. The company manufactures passenger vehicles, trucks, buses, luxury cars, SUVs, etc.

The need for MIS came up as they lacked a system providing real-time data from all departments of the organization which could be accessed by everyone to facilitate perfect

coordination among them. The rate of flow of information was an immediate problem that needed to be fixed as it impacted departments like sales, finance, and production. Miscommunication among vehicle dealers and manufacturers was imminent. To solve all these issues, they came up with an implementation of ERP.[34]

Figure 10. The Management Information Systems in Tata

5.1. ERP System by SAP

The ERP package, developed by Tata Technologies along with SAP, India, managed to solve some of these issues. It managed to provide a detailed overview from ordering a vehicle to its delivery to the customer. It accurately handled warranty claims by the customer as everything was stored in the Information System. It helped in managing external relationships between the company and its customers and partners. The implantation was done in a set of phases using a distributed server system.[35]

In spite of the noticeable gains through the system, they weren't satisfactory to the organization as a whole. At the bottom-most transaction level, the system had little to no impact on the flow of information. To meet the organization's needs and standards, several changes had to be made.

5.2. CRM solution by Siebel

Siebel Systems, Inc., a business applications software developer, deployed Siebel Automotive, a Customer Relationship Management (CRM) solution to provide better customer service and maintain better relationships with its dealers. This had an immediate impact on customer satisfaction levels, operational costs reduction, and responsiveness to its customer and dealer requirements.

This system helped Tata Motors to collect feedback directly from its customers regarding the vehicle's design, quality of manufacturing, and the effectiveness of its marketing strategies and campaigns. It was capable of handling the vast dealer network of the company across the world and provided a user-friendly interface to interact with people of different skill levels.

The major benefits found by the company included improvement in demand forecasting, managing logistics and inventory, faster feedback on performance resulting in a reduction of quality-related expenditure, improved growth in revenue from vehicle sales, and post-sales parts business. Additionally, the functionality in Siebel Automotive of sales reporting enabled Tata Motors to segregate sales target numbers to its dealers to improve its sales from all regions of the country.[36]

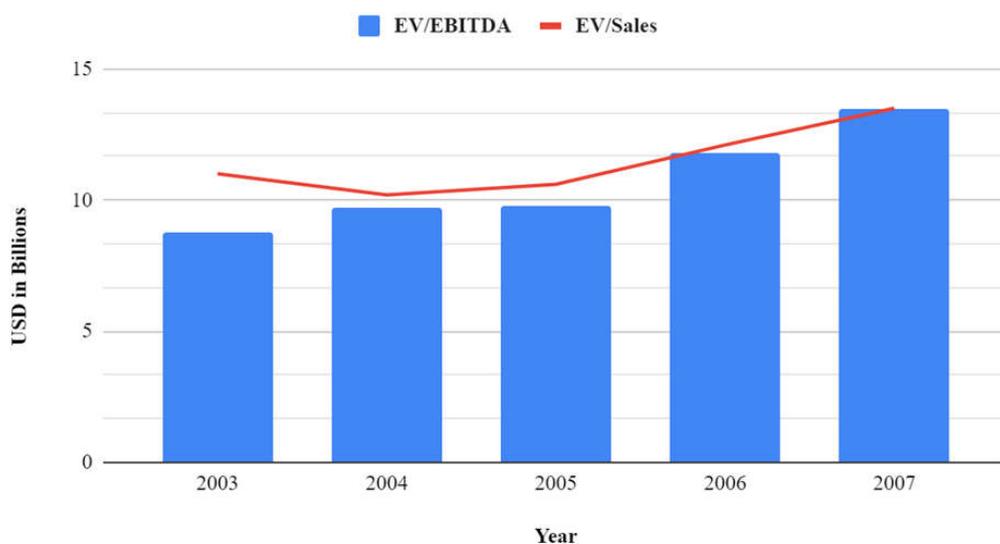### 5.3. Advancements of Tata Motors with MIS

Figure 11. Enterprise Value of Tata Motors from 2003 to 2007. This figure is just an approximation used to illustrate the benefit of MIS[37]

Tata Motors started planning to implement an MIS in 1998 and implemented it in 2003 after several upgrades to the system. The above graph represents its Enterprise value in the years 2003 to 2007. From 2003, the company took a couple of years to adjust to this new system as the EV/Sales value went down to around 10.2 billion USD in 2004. But the company has seen immediate progress in 2005 with around 10.6 billion USD, 12.1 in 2006 and almost 14 in 2007. The company's EV value in Sales grew by almost 25% in the span of 4 years after introducing MIS. EBITDA stands for earnings before interest, taxes, depreciation, and amortization, which is a measure of a company's total financial performance. EV/EBITDA value also showed significant growth towards the end. It showed almost 35% growth from around 8.8 billion USD in 2003 to 13.5 in 2007.
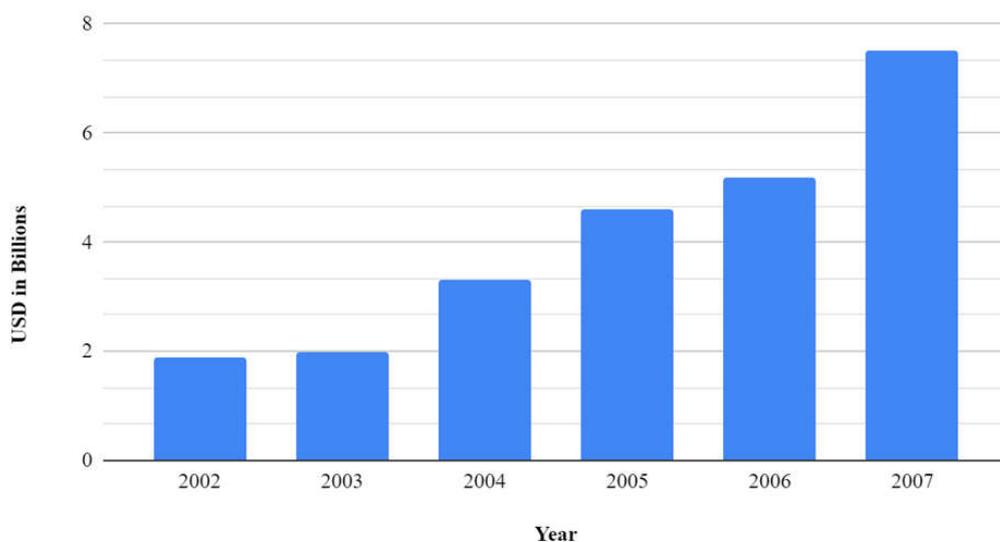

Figure 12. Annual Revenue of Tata Motors from 2002 to 2007. This figure is just an approximation used to illustrate the benefit of MIS[38]

The graph shows the annual revenue generated by the company between the years 2002 to 2007. Tata Motors showed progress in annual revenue from around 2 billion USD in 2003 to 3.3 billion USD in 2004 after implementing MIS in 2003. This growth kept increasing throughout the decade and it recorded around 7.5 billion USD by the end of 2007. It resulted in a more than 70% increase in annual income between 2003 and 2007, one of the main reasons being the systems implemented for MIS.

6. Cons of MIS

Following are the disadvantages of MIS:

6.1. The expense of implementing MIS:

The funds or budget of an MIS cannot be planned like any other system in a company. Determining an accurate estimate for expenditure for an MIS is extremely difficult and it changes as the needs and structure of the company change.

6.2. Maintenance of MIS:

Generally, MIS contains highly sensitive data of a company. Hence, it is extremely important for a company to secure such a system. To accomplish this, constant monitoring of the people accessing the system, filtering of unnecessary information, and warnings of a potential breach in the systems need to be implemented. Doing so would indirectly increase its expense.

6.3. Effectiveness of MIS:

Changes in the management at the top or middle levels could potentially lower the effectiveness of data given by MIS. The people at the top management level have a set of requirements from MIS according to the protocols or format followed by them. Frequent changes at the top would change its requirements according to its own format.

6.4. Factors considered by MIS:

A typical MIS only considers qualitative factors but many other non-qualitative factors also play a key role in an enterprise's growth (such as employee's attitude, behavior, motivation levels, etc.).

6.5. Quality of output generated:

The quality of the input data given for processing to an MIS determines the quality of the generated output information. Hence, at most care is necessary while choosing the raw data to be given to an MIS.[39]

7. Conclusion

As we have seen with multiple automobile companies across the world, Information Systems and their management played a major role in the company's all-around development. It helped the companies in making better decisions and gaining high efficiency in key areas such as marketing, finance, accounting, managing relationships with customers and sponsors, managing supply chains, communicating information to all modules of the company, etc. It also helped companies to exactly pin-point the key systems they were lacking in. Although, not all companies that largely invested in MIS couldn't achieve the goals they set. The companies had to consider factors such as rival company's MIS technology, identifying inefficient processes within the company, feedback from the customer, etc. before bringing their MIS system into implementation. The companies which invested in the key areas by taking all those factors into account were able to achieve huge value for money. As decades go by, innovative and better technologies are being implemented by automobile companies leading to their success and MIS has become an absolute necessity in today's world.

8. Conflict of Interest

The authors listed in this paper have no conflict of interest and there was no problem related to funding. All authors have contributed equally with their valuable comments.

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